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10/565,098

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Ik-Hyun Kwon

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EXAMINER

SMITH, JEREMIAH R

ART UNIT

PAPER NUMBER

1791

NOTIFICATION DATE

DELIVERY MODE

02/20/2009

ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

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Office Action Summary	Application No. 10/565,098	Applicant(s) KWON ET AL.	
	Examiner JEREMIAH SMITH	Art Unit 1791	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 18 January 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-7 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-7 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 18 January 2006 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>1/18/06</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Objections

1. Claim 1 is objected to because of the following informalities: “0.01 to 5% by weight” as recited in step (A) is unclear. Is the 0.01 to 5% with respect to the initial weight of the solvent or the weight of the solution? Appropriate correction is required.

Double Patenting

2. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the “right to exclude” granted by a patent and to prevent possible harassment by multiple assignees. A nonstatutory obviousness-type double patenting rejection is appropriate where the conflicting claims are not identical, but at least one examined application claim is not patentably distinct from the reference claim(s) because the examined application claim is either anticipated by, or would have been obvious over, the reference claim(s). See, e.g., *In re Berg*, 140 F.3d 1428, 46 USPQ2d 1226 (Fed. Cir. 1998); *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) or 1.321(d) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent either is shown to be commonly owned with this application, or claims an invention made as a result of activities undertaken within the scope of a joint research agreement.

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

3. Claim 1 is rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claim 1 of U.S. Patent No. 7214335 (hereinafter referred to as ‘335). Although the conflicting claims are not identical, they are not patentably distinct from each other because of the following:

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4. '335 teaches a method for producing a cellulose fiber comprising the steps of: (A) preparing an N-methylmorpholine-N-oxide solution by dissolving a cellulose powder in concentrated liquid-state N-methylmorpholine-N-oxide (NMMO) to a small amount of 0.01 to 3% by weight (claim 1 step (A)); (B) introducing the N-methylmorpholine-N-oxide solution having a small amount of the cellulose powder dissolved and cellulose powder into a kneader (claim 1 step (B); a screw extruder is a kneader), mixing, swelling and partially dissolving the cellulose in the kneader (claim 1 step (B); "dispersing to produce a swollen and homogenized solution" is dissolving), and then feeding the paste to an extruder to obtain a homogenized cellulose solution (claim 1 step (B)); (C) spinning the cellulose solution by extrusion through a spinning nozzle (claim 1 step (C)), and then solidifying the spun cellulose solution which has reached a solidifying bath through an air bed to obtain a multi-filament (claim 1 step (C)); and (D) washing, drying, oil-treating and winding the obtained multi-filament (claim 1 step (D)).

5. '335 does not explicitly teach the method wherein i) the concentration range of the initial cellulose powder to be added is 0.01 to 5%, or ii) the kneading is performed without reducing the pressure to produce a paste.

6. Regarding i), although the ranges of claim 1 of the instant application and claim 1 of '335 do not overlap, a prima facie case of obviousness exists because the ranges are close enough that one skilled in the art would have expected them to have the same properties. *Titanium Metals Corp. of America v. Banner*, 778 F.2d 775, 227 USPQ 773 (Fed. Cir. 1985).

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7. Regarding ii), the limitation “the kneading is performed without reducing the pressure to produce a paste” is a negative limitation. It would have been obvious to a person having ordinary skill in the art at the time of invention to perform the method of ‘335 without reducing pressure during kneading because a reduction of pressure step is not mentioned in ‘335.

8. Claims 2, 3, and 6 are rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1 of U.S. Patent No. 7214335 in view of Hammer (USP 6656547).

9. Regarding claims 2, 3, and 6, ‘335 remains as applied to claim 1. Claim 1 of ‘335 claims a method of forming cellulose fiber from a cellulose/NMMO solution but does not claim maintaining the temperature of the cellulose/NMMO solution or the kneader at a 50 to 95 C and does not claim supplying the solution to the kneader while the solution is maintained at 50 to 95 C.

10. In the analogous art of preparing products from cellulose/NMMO solutions, Hammer teaches that 85 to 95 degrees is a critical temperature range in cellulose/NMMO solution processing (“In the NMMO monohydrate, the cellulose dissolved completely at a temperature of 85 to 95 C with intensive stirring”, column 2 lines 47-49), making temperature a result-effective variable.

11. Because 85 to 95 C is a critical range in cellulose/NMMO solution processing, it would have been obvious for a person having ordinary skill in the art at the time of invention to modify the method of claim 1 of ‘335 by optimizing the temperature of the solution, the kneader, and other processing steps to produce an optimal solution/fiber.

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12. Claims 4, 5, and 7 are rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claim 1 of U.S. Patent No. 7214335 in view of Zhao (US 2005/0056956).

13. Regarding claims 4 and 5, '335 remains as applied to claim 1. Claim 1 of '335 claims a method of forming cellulose fiber from a cellulose/NMMO solution but does not claim the process wherein the final solution contains cellulose at a concentration of 5 to 20% by weight with respect to the total weight of the solution or contains moisture in an amount of 10 to 18% by weight with respect to the total weight of the solution.

14. In the analogous art of fiber processing comprising cellulose/NMMO solutions, Zhao teaches applying to an extruder a cellulose/NMMO solution comprising cellulose at a concentration of 5 to 20% by weight and moisture in an amount of 10 to 18% by weight with respect to the total weight of the solution. ("A 1 inch extruder is fed with a NMMO solution comprising 14% by weight cellulose, 76% by weight of NMMO and the rest [10%] is mainly water [moisture].", paragraph [0032])

15. It would have been obvious to a person having ordinary skill in the art at the time of invention to modify the method of claim 1 of '335 by feeding to the extruder a solution comprising cellulose at a concentration of 5 to 20% by weight and moisture in an amount of 10 to 18% by weight with respect to the total weight of the solution as taught by Zhao for the benefit of ensuring that a homogeneous solution is attained. It should be pointed out that moisture, NMMO, and cellulose concentrations are result-effective variables affecting the fibers produced.

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16. Regarding claim 7, '335 remains as applied to claim 1. Claim 1 of '335 claims a method of forming cellulose fiber from a cellulose/NMMO solution but does not claim the process wherein the cellulose powder at the step (A) or step (B) is mixed with other polymer materials.

17. In analogous art, Zhao teaches a method wherein the cellulose powder at the step (A) or step (B) is mixed with other polymer materials. ("The term of "cellulose" as used here should be understood as either cellulose from natural resources or a synthetic polymer blend with cellulose.", paragraph [0011])

18. It would have been obvious to a person having ordinary skill in the art at the time of invention to modify the method of claim 1 of '335 by mixing in other polymer materials with the cellulose powder for the benefit of modifying the properties of the fibers produced. It should be pointed out that in the art of cellulose/NMMO solution processing, the term "cellulose" is sometimes used to describe a cellulose/polymer blend.

Claim Rejections - 35 USC § 103

19. It should be pointed out that because '335 and the instant application have different inventive entities, '335 is eligible as a 102(e) reference.

20. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

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21. Claim 1 is rejected under 35 U.S.C. 103(a) as being unpatentable over U.S.

Patent No. 7214335.

22. Regarding claim 1, all of the limitations are explicitly taught as described in the double patenting rejection of claim 1 above except i) the concentration range of the initial cellulose powder to be added is 0.01 to 5% and ii) the kneading is performed without reducing the pressure to produce a paste.

23. Regarding i), '335 teaches a range of 0.01 to 3 % and therefore a prima facie case of obviousness exists because the ranges are close enough that one skilled in the art would have expected them to have the same properties. *Titanium Metals Corp. of America v. Banner*, 778 F.2d 775, 227 USPQ 773 (Fed. Cir. 1985).

24. Regarding ii), the limitation "the kneading is performed without reducing the pressure to produce a paste" is a negative limitation. It would have been obvious to a person having ordinary skill in the art at the time of invention to perform the method of '335 without reducing pressure during kneading because a reduction of pressure step is not mentioned in '335. Furthermore, '335 teaches that a problem with prior art is that a step of reducing pressure wastes time and energy in column 1 lines 53-61.

25. Claims 2, 3, and 6 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 7214335 as applied to claim 1 above, and further in view of Hammer (USP 6656547).

26. Regarding claims 2, 3, and 6, the limitations are met as described in the double patenting rejection of claims 2, 3, and 6 above, respectively.

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27. Claims 4, 5, and 7 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 7214335 as applied to claim 1 above, and further in view of Zhao (US 2005/0056956).

28. Regarding claims 4, 5, and 7, the limitations are met as described in the double patenting rejection of claims 4, 5, and 7 above, respectively.

29. Claims 1, 4, 5, and 7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kwon (KR 10-2005-0003121, hereinafter referred to as '121) in view of Zhao (US 2005/0056956). Citations for '121 are taken from machine translation.

30. Regarding claim 1, '121 teaches a method for producing a cellulose fiber comprising the steps of: (A) preparing an N-methylmorpholine-N-oxide solution by dissolving a cellulose powder in concentrated liquid-state N-methylmorpholine-N-oxide (NMMO) to a small amount of 0.01 to 5% by weight (see page 4, paragraphs 1 and last paragraph); (B) introducing the N-methylmorpholine-N-oxide solution having a small amount of the cellulose powder dissolved and cellulose powder into a kneader, mixing, swelling and partially dissolving the cellulose in the kneader (see page 4, paragraph 1), and then feeding the paste to an extruder to obtain a homogenized cellulose solution (page 4 paragraph 1);

31. '121 does not explicitly teach the method wherein the kneading is performed without reducing the pressure to produce a paste; however, the limitation "the kneading is performed without reducing the pressure to produce a paste" is a negative limitation. It would have been obvious to a person having ordinary skill in the art at the time of

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invention to perform the method of '121 without reducing pressure during kneading because a reduction of pressure step is not mentioned in '121.

32. '121 teaches a method of preparing a precursor cellulose solution which could be used to produce fiber as described in the abstract, but does not give great detail on the method of making the fiber. Specifically, '121 does not appear to teach the method comprising the steps of (C) spinning the cellulose solution by extrusion through a spinning nozzle, and then solidifying the spun cellulose solution which has reached a solidifying bath through an air bed to obtain a multi-filament; and (D) washing, drying, oil-treating and winding the obtained multi-filament.

33. In an analogous which makes fiber from cellulose/NMMO solutions, Zhao teaches a method comprising the steps of (C) spinning the cellulose solution by extrusion through a spinning nozzle ("spinning nozzles", paragraph [0015]), and then solidifying the spun cellulose solution which has reached a solidifying bath through an air bed to obtain a multi-filament ("air jet", paragraph [0012]); and (D) washing, drying, oil-treating and winding the obtained multi-filament ("The well bonded web is regenerated, washed, post-treated, and air dried", paragraph [0031]).

34. It would have been obvious to a person having ordinary skill in the art to modify the method of '121 by further processing the produced solution as taught by Zhao for the benefit of making cellulose fibers.

35. Regarding claims 4, 5, and 7, '121 and Zhao remain as applied to claim 1. The further limitations of claims 4, 5, and 7 are obviated by Zhao as described in the double patenting rejection of claims 4, 5, and 7 above, respectively.

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36. Claims 2, 3, and 6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kwon (KR 10-2005-0003121) in view of Zhao (US 2005/0056956) as applied to claim 1 above, and further in view of Hammer (USP 6656547).

37. Regarding claims 2, 3, and 6, '121 and Zhao remain as applied to claim 1. The further limitations of claims 4, 5, and 7 are obviated by Hammer as described in the double patenting rejection of claims 2, 3, and 6 above, respectively.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to JEREMIAH SMITH whose telephone number is 571-270-7005. The examiner can normally be reached on Monday to Thursday, 7:30 AM to 5:00 PM and every other Friday, 8:30 AM to 4:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Joseph Del Sole can be reached on 571-272-1130. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

JRS

/Joseph S. Del Sole/
Supervisory Patent Examiner, Art Unit 1791